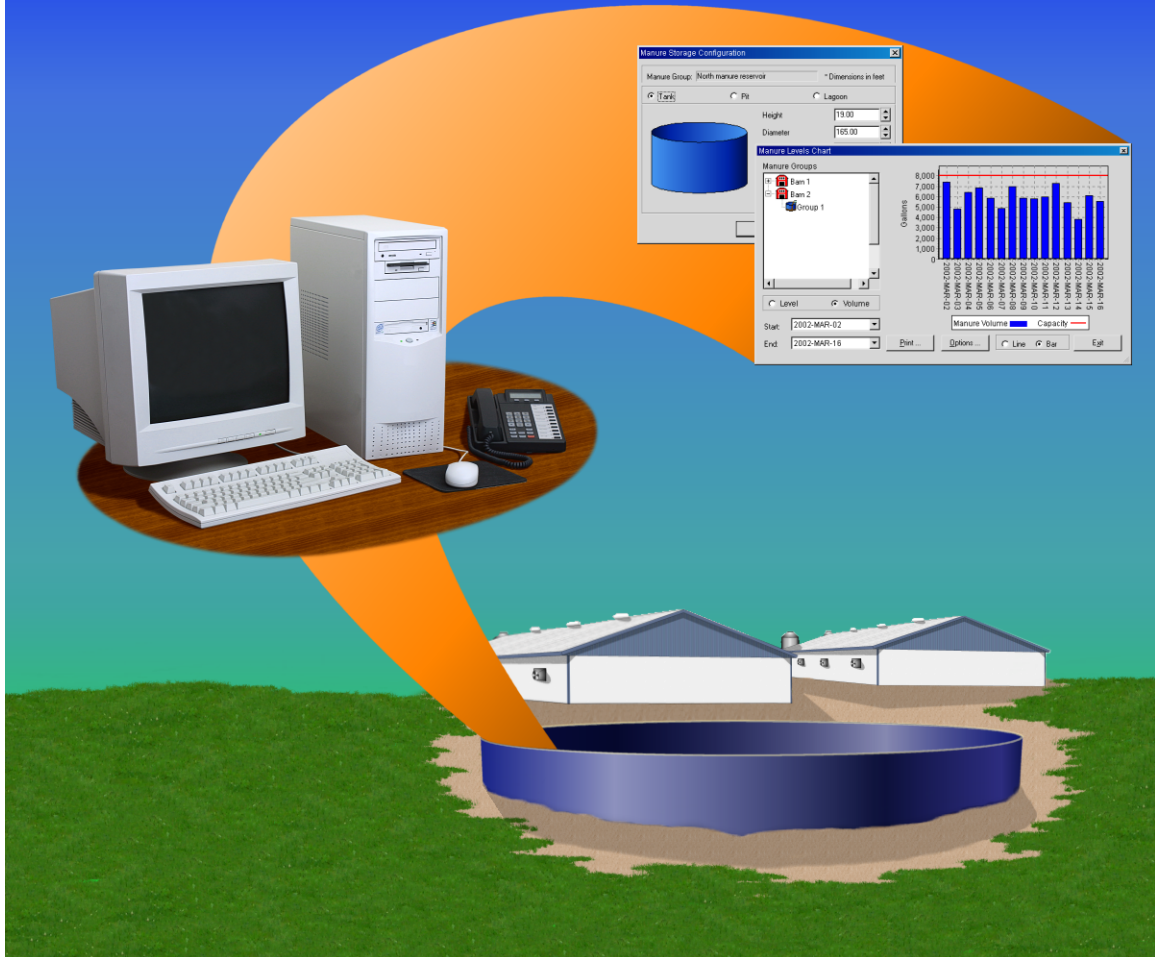


OMNI-Manure



OMNI-Manure user manual

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LIMITED WARRANTY

Software

Phason Inc. (Phason) warrants for a period of 90 days from the date of purchase that the software product will execute its programming instructions when properly installed on the personal computer or workstation indicated on this package. Phason does not warrant that the operation of the software will be uninterrupted or error-free. Should this software product fail to execute its programming instructions during the warranty period, the purchaser's remedy shall be to return the software CD (media) to Phason for replacement. Should Phason be unable to replace the media within a reasonable amount of time, the purchaser's alternate remedy shall be a refund of the purchase price upon return of the product and all copies.

Media

Phason warrants the media upon which this product is recorded to be free from defects in materials and workmanship under normal use for a period of 90 days from the date of purchase. Should the media prove to be defective during the warranty period, the purchaser's remedy shall be to return the media to Phason for replacement. Should Phason be unable to replace the media within a reasonable amount of time, the purchaser's alternate remedy shall be a refund of the purchase price upon return of the product and all copies.

Notice of warranty claims

The purchaser must notify Phason in writing of any warranty claim no later than 30 days after the warranty period expires.

Limitation of warranty

Phason makes no other express warranty, whether written or oral, with respect to this product. Any implied warranty of merchantability or fitness is limited to the 90 days of this written warranty. Some states or provinces do not allow limitations on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you. This warranty gives specific legal rights and you may have other rights, which vary from state to state, or province to province.

Exclusive remedies

The remedies provided above are the purchaser's sole and exclusive remedies. Phason shall not be liable for any direct, indirect, special, incidental, or consequential damages (including lost profit) whether based on warranty, contract, tort, or any other legal theory. Some states or provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Warranty service

Warranty service may be obtained from the Phason office location indicated in the user manual or service booklet.

LIMITED WARRANTY

This warranty applies only to the Manure Level Sensor (MLS). If you need warranty service, return the product and original proof of purchase to your dealer.

Phason Inc. (Phason) warrants this product subject to the following terms and conditions.

This warranty is valid only to the original purchaser of the MLS, for two years from the manufacturing date. The manufacturing date is stated in the first eight digits of the serial number in the form year-month-day.

Phason hereby warrants that should the MLS fail because of improper workmanship, Phason will repair the MLS, effecting all necessary parts replacements without charge for either parts or labor.

Conditions

- ◆ Installation must be done according to our enclosed installation instructions.
- ◆ The MLS must not have been previously altered, modified, or repaired by anyone other than Phason.
- ◆ The MLS must not have been involved in an accident, misused, abused, or operated or installed contrary to the instructions in our user and/or installation manuals. Phason's opinion about these items is final.
- ◆ The person requesting warranty service must be the original purchaser of the MLS, and provide proof of purchase upon request.
- ◆ All transportation charges for products submitted for warranty must be paid by the purchaser.

Except to the extent prohibited by applicable law, no other warranties, whether expressed or implied, including warranties of merchantability and fitness for a particular purpose, shall apply to the MLS. Any implied warranties are excluded.

Phason is not liable for consequential damages caused by the MLS.

Phason does not assume or authorize any representatives, or other people, to assume any obligations or liabilities, other than those specifically stated in this warranty.

Phason reserves the right to improve or alter the MLS without notice.

Service and technical support

Your dealer will be happy to answer all technical questions that will help you use OMNI-Manure.

Before contacting your dealer or Phason, check the following:

- ◆ Read this manual or check the online Help for information about the window you are having trouble with.
- ◆ If you still have a problem with OMNI-Manure or OMNI-4000, collect the following information:
 - Any messages displayed by the OMNI-4000 software
 - A description of the problem
 - A description of what you were doing before the problem occurred
 - Information about your manure storage reservoir (type and dimensions)

My dealer's name: _____

How to contact my dealer:

Street/PO Box _____

City _____

State/Province _____

Zip/Postal _____

Phone _____

Fax _____

E-mail _____

Web site _____



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Chapter 1: Introducing OMNI-Manure

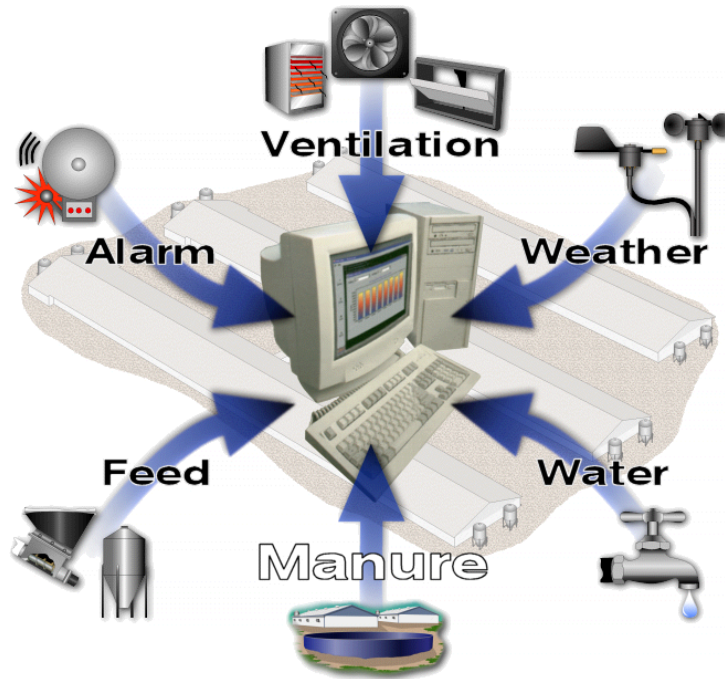
This chapter introduces you to OMNI-Manure and the layout of this manual. Read this chapter before reading the rest of the manual.

- ◆ Introducing OMNI-Manure
- ◆ About this manual
- ◆ Screen terminology
- ◆ Computer requirements

Introducing OMNI-Manure

All of us at Phason want to welcome you to OMNI-Manure, an easy and effective solution for monitoring manure levels at your site.

OMNI-Manure works with the Manure Level Sensors to measure the manure level in your reservoirs (tanks, pits, or lagoons). The Manure Level Sensors use ultrasonic technology to accurately measure manure levels. OMNI-Manure is part of the OMNI-4000 Integrated Production Control system.



Easy-to-read displays show you manure levels, manure level forecasts, and alarm levels. The charting and reporting tools allow you to review and print manure level information for any previous period.

As with all OMNI-4000 software modules, you can export information to third-party software such as databases, spreadsheet programs, or reporting packages.

Theory of operation

The Manure Level Sensor uses an ultrasonic transducer to sense (measure) manure levels. The sensor emits ultrasonic pulses that are reflected by the manure. The reflected pulse is called an echo. The sensor measures the time the pulses take to reflect back to the sensor and then sends the data to the OMNI-Manure software. OMNI-Manure analyzes the data and then converts it to reliable measurements of the manure level, which it displays in height or volume.

OMNI-Manure determines the amount of manure accumulating over time by measuring the manure levels at different times of the day and then calculating the change. OMNI-Manure calculates the manure level at midnight each day.

Features

OMNI-Manure

- ◆ Easy-to-read manure level displays
- ◆ Powerful, easy-to-use charting and reporting tools
- ◆ Flexible information display—Imperial or metric, height or volume
- ◆ Programmable alarms with notification and logging

Manure Level Sensor

- ◆ Reliable, accurate ultrasonic technology
- ◆ Capability to monitor reservoirs up to 32 feet deep
- ◆ Easy-to-follow installation instructions
- ◆ -22 to 104°F (-30 to 40°C) operating range
- ◆ Weather and UV-resistant enclosures
- ◆ Two-year limited warranty

About this manual

This manual describes the features of OMNI-Manure and how to use them. You should be familiar with the following:

- ◆ Microsoft Windows™ – how to perform basic Windows functions such as opening and closing windows, finding and opening files, saving and closing files, as well as using a mouse and keyboard.
- ◆ OMNI-4000 software – basic windows and procedures in the main OMNI-4000 software. For more information, refer to the OMNI-4000 Software User Manual.
- ◆ OMNI-4000 hardware and equipment – common OMNI-4000 hardware devices such as Power Blocks.

Styles used in this manual

This manual uses the following styles:

- ◆ All buttons are bolded.
For example: Click **OK** to save the changes.
- ◆ All menu commands are bolded and separated by a comma.
For example: On the menu bar, click **File** and then click **Exit** to close OMNI-4000.
- ◆ All keyboard keys are in upper case letters. Keys that need to be pressed at the same time are separated by a +, multiple steps are separated by a comma.
For example: Press ALT+X or ALT+F, X to close OMNI-4000.
- ◆ All filenames and directories are in a monospace font.
For example: The default directory is C : \OMNI4000.

Hint/tip



This is a hint or tip. It contains helpful information that might make it easier for you to set up or use OMNI-Manure.

Note

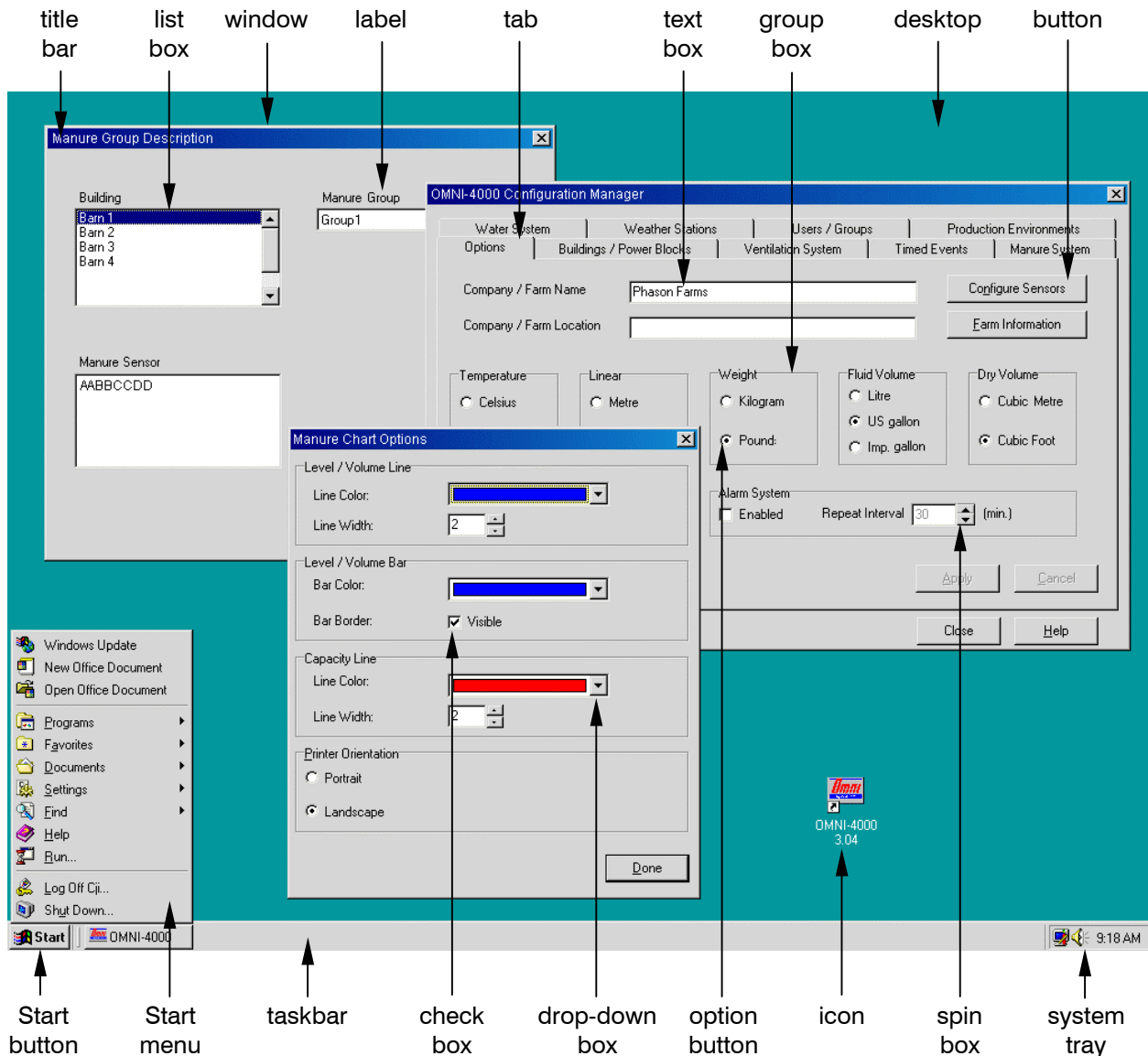


This is a note. It contains information that might help you better understand OMNI-Manure.

A copy of this manual is also on your OMNI-4000 installation CD. The file is in Adobe Acrobat™ Portable Document Format (PDF). The PDF file (27040100.pdf) installs in C : \OMNI\Docs during a normal installation. You can view this file by opening it using Adobe Acrobat Reader™.

Screen terminology

The following image shows the terminology this manual and Phason's Customer Support use to describe the Microsoft Windows and the OMNI-4000 software. If you are unfamiliar with any of these terms, bookmark this page so you can refer to it.



Computer requirements

These are the requirements for a new computer to run OMNI-Manure. The computer must meet or exceed these requirements. If you have any questions about these requirements, please contact Phason's customer service at 204-233-1400 or support@phason.ca.

Component	Requirement	Notes
Motherboard	Pentium or equivalent	<ul style="list-style-type: none"> - Must have at least one ISA or PCI slot for the OMNI serial port - OMNI-Alarm version 1.03 requires an ISA slot
Processor (CPU)	800 MHz	
Memory (RAM)	128 MB PC-100 SDRAM	
Monitor	17"	
Display adapter (video card)	8 MB, 800×600 high color	<ul style="list-style-type: none"> - The video card may be on the motherboard or a separate ISA, PCI, or AGP card - 1024×768 true color is recommended
Hard disk	20 GB	
CD-ROM	40 X	<ul style="list-style-type: none"> - A CD-R/RW is useful for backups
Floppy disk drive	Standard 3.5", 1.44 MB	<ul style="list-style-type: none"> - A ZIP drive is useful for backups
Keyboard	Standard 104-key	<ul style="list-style-type: none"> - Compatible with the motherboard
Mouse	Standard 2-button	<ul style="list-style-type: none"> - Compatible with the motherboard
Modem	56K (US Robotics)	<ul style="list-style-type: none"> - External serial modems are recommended—do not use external USB modems - Use hardware modems that have a controller—do not use software modems or WinModems
Operating system	Windows 98 SE or Me	
Other software	Symantec pcAnywhere version 10.0 or later	<ul style="list-style-type: none"> - OMNI-Enterprise requires pcAnywhere 10.0 or higher

- ◆ If you will not be using Phason's remote services, you will not need the modem or pcAnywhere
- ◆ Sound cards can cause problems with OMNI-4000 and should be avoided.
- ◆ The OMNI serial port must not have the same interrupt request (IRQ) as any other device.
- ◆ To print charts and reports, you must have a printer installed and connected to the computer.



Chapter 2: Installing the hardware

This chapter explains how to install the Manure Level Sensors and Regulated Power Supply. Read this chapter and install all the hardware before installing and configuring the OMNI-Manure software.

- ◆ Installing the hardware
- ◆ Installing the Manure Level Sensor
- ◆ Installing a Regulated Power Supply

Installing the hardware

Before you install the OMNI-Manure software and begin using the system, you must install the hardware. The hardware consists of the Manure Level Sensors and power supply (Phason Regulated Power Supply recommended).

This chapter explains how to install the Manure Level Sensors and Regulated Power Supply. Read this chapter and install all the hardware before installing and configuring the OMNI-Manure software.

Installing the Manure Level Sensor

Phason's Manure Level Sensor (MLS) works with OMNI-Manure to measure and monitor the manure level in a concrete manure reservoir. The Manure Level Sensor uses ultrasonic technology to accurately measure the manure levels. The sensor emits ultrasonic pulses that are reflected by the manure. The sensor measures the time the pulses take to reflect back to the sensor and then sends the data to the OMNI-Manure software.

The Manure Level Sensor requires careful installation for proper long-term operation. Carefully read and follow *all* the instructions in the order they are listed. If you do not follow the instructions and install the Manure Level Sensor properly, the Manure Level Sensor might not operate properly.



DO NOT open the sensor unit. This will damage the seal and void the warranty.

- ◆ Phason recommends using conduit to protect all communication and power cables.
- ◆ Use watertight strain reliefs or conduit connectors at all cable entry points.
- ◆ Make sure the communication and sensor cables do not become pinched or bent.
- ◆ When selecting a location for the sensor and control units, select a location where they will not be damaged when the tank is filled or pumped.

MLS electrical ratings

- ◆ 10 to 14 VDC
- ◆ 125 mA

MLS parts list

The Manure Level Sensor (MLS) hardware consists of the control unit, sensor unit, and the mounting brackets and hardware. The sensor unit has a cable attached to it that connects to the control unit.

The following parts are included with your Manure Level Sensor

- | | |
|---|---|
| (1) – control unit | (1) – $\frac{5}{8}$ -inch strain relief nut |
| (1) – sensor unit | (1) – $\frac{3}{16}$ -inch masonry drill bit |
| (1) – installation guide | (8) – 2-inch masonry screws |
| (1) – mounting bracket (base) | (7) – 1-inch mounting bolts |
| (1) – mounting bracket (top) | (7) – nuts |
| (1) – $\frac{5}{8}$ -inch strain relief | (2) – U-bolt assemblies (with washers and nuts) |

In addition to the parts included with the Manure Level Sensor, you need to provide the following items.

Item	Notes
DC power supply (10 to 14 VDC)	- Phasor Regulated Power Supply (RPS) or equivalent. For information, contact your dealer.
Power cable	- 20 AWG or larger, weather resistant - Enough to go from the power supply to the control unit - Longer distances require larger wire
Communication cable	- Unshielded twisted pair (UTP), category 3 or higher (category 5 recommended) - Enough to go from the OMNI-Server or Power Block to the control unit
Conduit	- $\frac{3}{4}$ -inch diameter, metal - Minimum 5 feet, maximum 6 feet
Strain reliefs or conduit connectors	- Use watertight strain reliefs or conduit connectors at all cable entry points

MLS installation

Before you install the Manure Level Sensor:

- ◆ Collect all the necessary items.
- ◆ Carefully read *all* the instructions.

There are six main steps to installing the Manure Level Sensor. Follow all the steps in the order they are listed.

1	2	3	4	5	6
Read all the installation instructions and collect all the necessary items.	Assemble the mounting bracket.	Mount the sensor and control units.	Connect the sensor cable to the control unit.	Connect the communication wiring to the control unit.	Connect the power wires and fasten the cover to the control unit.

MLS control unit layout

Incoming power terminal block

Connect the incoming DC power to this terminal block.

Communication socket

Plug the communication connector into this socket.

Communication cable

Run the communication cable through this knockout.

Power cable

Run the incoming power cable through this knockout.

Sensor cable

Run the sensor cable through this knockout.

Sensor terminal blocks

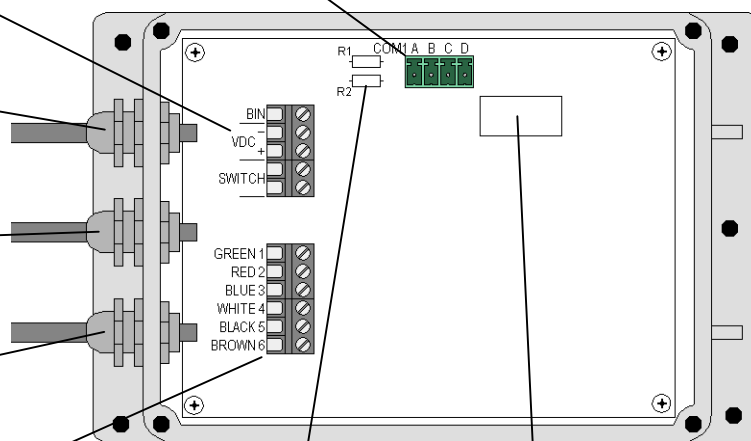
Connect the sensor unit wires to these terminal blocks.

Termination resistors

If there are any devices on this communication channel after this Manure Level Sensor, then use wire cutters to remove *only* these two resistors.

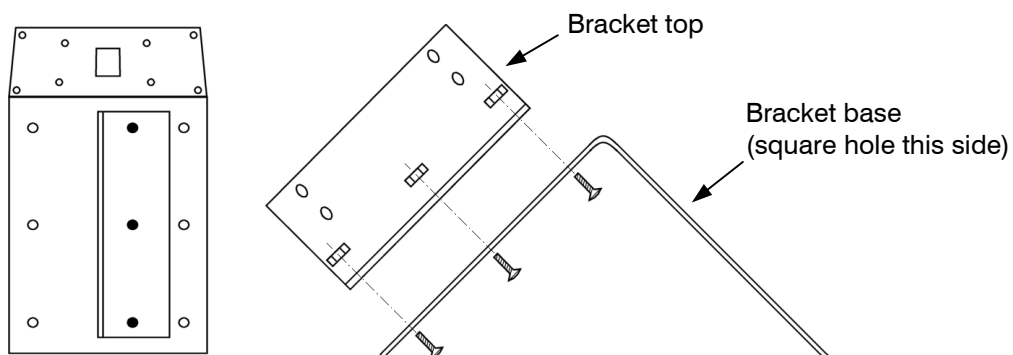
Address label

This is the Manure Level Sensor's address on the OMNI-4000 system. Write down this address, the person installing the software will need it.



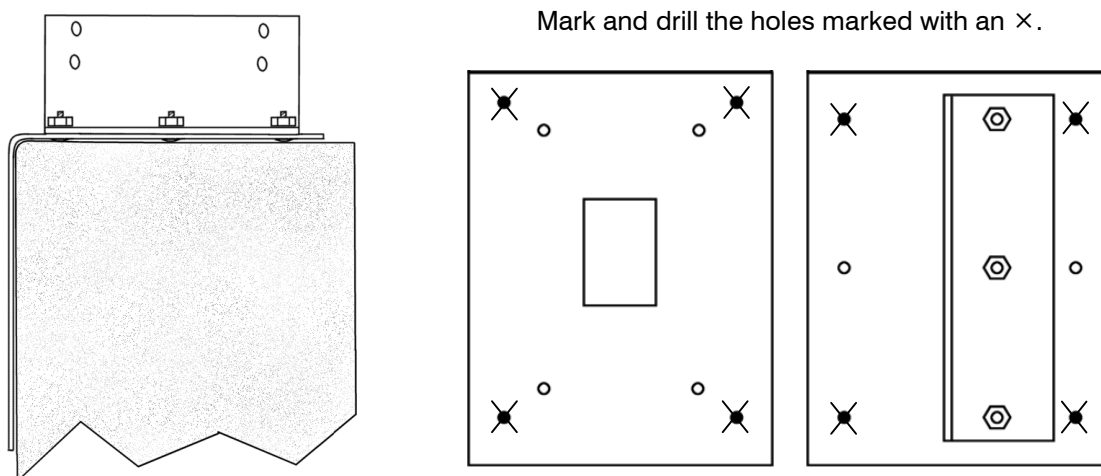
Assemble the bracket

1. Insert three of the mounting screws through the center row of holes in the bracket base.
2. Place the bracket top over the screws and then fasten it to the bottom using three of the nuts.



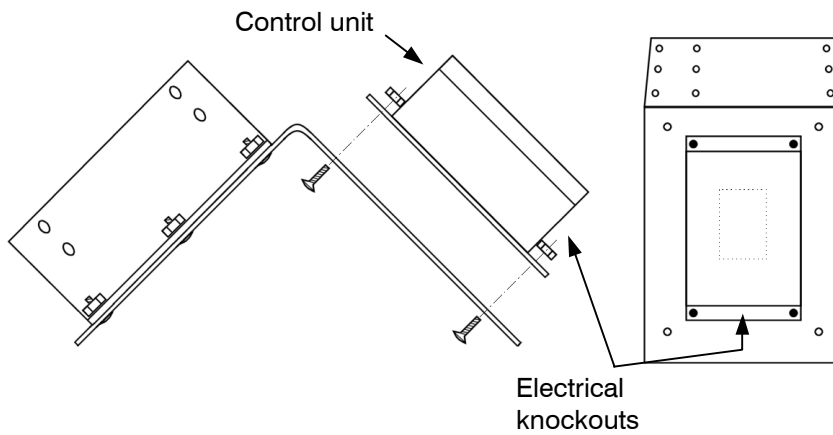
Mark and drill the mounting holes

1. Place the bracket on the edge of the tank.
2. Mark the four holes (shown with an × below) for the top using a marker or punch. Be careful not to move the bracket while you are marking the holes.
3. Mark the four holes for the side.
4. Make sure all the holes line up and then remove the bracket.
5. Drill the holes using the masonry bit.



Fasten the control unit to the bracket

1. Insert the remaining four mounting screws through the four inside holes in the bracket base.
2. Place the control unit over the screws with the electrical knockouts facing down.
3. Fasten the control unit to the base using the remaining nuts.



Fasten the bracket to the tank

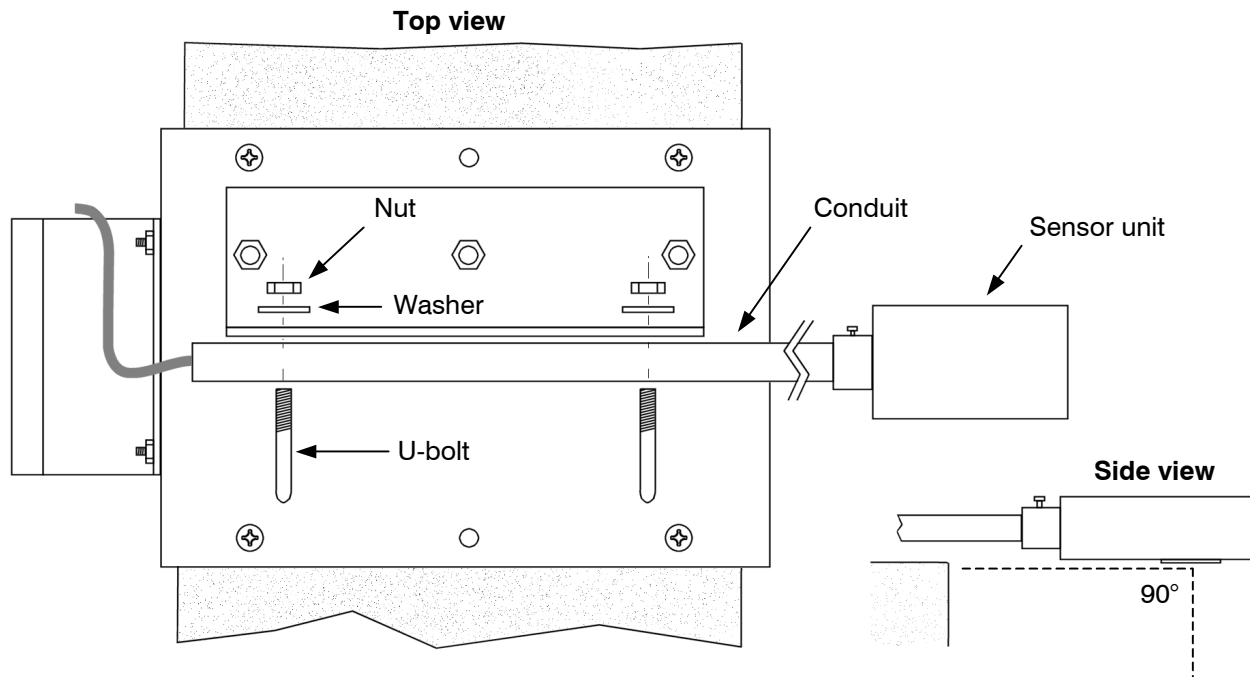
1. Place the bracket over the drilled holes. Make sure all the holes line up.
2. Fasten the bracket to the tank using the masonry screws.

Fasten the sensor to the bracket

1. Insert the U-bolts through the holes in the bracket and then attach the washers and nuts. Do not tighten the nuts at this time.
2. Run the sensor cable through a five to six foot piece of $\frac{3}{4}$ -inch conduit.
3. Fasten the conduit to the conduit connector.
4. Insert the conduit through the U-bolts and then align the sensor so that the screen is pointing down.
5. Tighten the nuts on the U-bolts.



The sensor screen must be pointing down at exactly a 90-degree angle or the sensor will not provide accurate readings.



Connect the sensor cable to the control unit

1. Remove the cover from the control unit.
2. Run the cable from the conduit down to the control unit.
3. Insert the cable through the strain relief in the control unit and then tighten the strain relief nut.
4. Connect the sensor wires to their terminal blocks according their color (for example, green sensor wire to **GREEN** terminal block). See the drawing on page 13 for locations.



DO NOT cut, splice, or add onto the sensor cable.

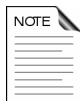
Connect the communication cable to the control unit



If you are using conduit for the communication and power cables, run all the cables in a single conduit and into the enclosure through the middle electrical knockout.

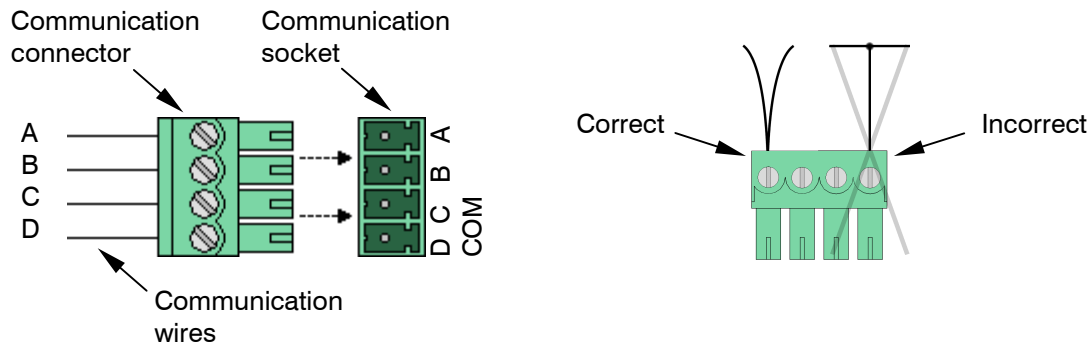
If you are using strain reliefs, remove the left electrical knockout (or drill an appropriately sized hole in the knockout) and insert the communication cable into the enclosure through a watertight strain relief. See the drawing on page 13 for the location.

1. Insert the communication cable through the strain relief or conduit connector.
2. Remove the communication connector from the socket.
3. Connect the communication wires as shown at the top of the next page.
4. If the MLS is not the last device on the communication channel, use side cutters to remove the termination resistors from the circuit board. See the drawing on page 13 for the location.
5. Continue the communication wire as shown below and on the next page. For more information about communication wiring, see the OMNI-4000 Hardware Installation manual or contact your dealer.



The communication cable *must* be connected as a continuous string from the OMNI Server to the last device on the communication channel. Do not use 'branches' or 'T connections'. The drawing at the top of the next page shows examples of correct and incorrect wiring.

The last device on the communication channel *must* have the termination resistors or a termination module installed. For more information, see the OMNI-4000 installation manual or contact your dealer.



Do not use excessive force when pulling the communication cable through conduit or strain reliefs. Pulling the communication cable with more than 25 pounds of force can damage the cable.

Connect the control unit to the power supply



If you are using strain reliefs, use the 1/2-inch hole in the middle electrical knockout (or drill an appropriately sized hole in the knockout) and insert the power cable into the enclosure through a watertight strain relief. See the drawing on page 13 for the location.

1. Connect the negative DC power wire to the VDC– terminal.
2. Connect the positive DC power wire to the VDC+ terminal.



Phason recommends using the Phason Regulated Power Supply (RPS).

The RPS is a CSA approved, Class-2 power supply. The RPS supplies 13.6 VDC and is the ideal power supply for a Manure Level Sensor. The RPS can supply power for up to eight Manure Level Sensors.

For more information about the Phason RPS, contact your dealer.

Fasten the cover to the control unit

1. Check to make sure you have connected all the wires to their proper locations.
2. Write down the Manure Level Sensor address (see the drawing on page 13 for the location), the person installing the software will need this information.
3. Fasten the cover to the control unit.

Installing a Regulated Power Supply

Phason's Regulated Power Supply (RPS) is a CSA approved, Class-2 power supply. The RPS supplies 13.6 VDC and 24 VAC power. The RPS is the ideal power supply for a Manure Level Sensor.

The RPS has a battery-backup option. The battery backup supplies enough power to maintain or slowly charge a 12 V gel cell battery (not included). If the incoming AC power fails, the battery provides power to the devices connected to the DC output terminal.



If you are using the battery-backup option, you must purchase the Phason battery cable assembly (part number 240012). For more information, contact your dealer.

RPS electrical ratings

Input	115/230 VAC 50 VA 50/60 Hz	Output	24 VAC 13.6 VDC 15 W maximum★	Fuse	250 V 1 A, fast-acting glass
--------------	----------------------------------	---------------	-------------------------------------	-------------	------------------------------

★ See NOTE below



The RPS supplies a maximum of 15 W of power. This means the combined power consumption of all the devices you connect to the RPS *cannot* be more than 15 W.

Some devices have a power consumption rating in watts; others have a current draw in amperes. To convert an ampere rating to watts, use the following formula.

$$W = V \times A$$

W=watts, V=volts (24 VAC or 13.6 VDC), A=amperes

Before connecting multiple devices to the RPS, you need to calculate the total power consumption of all the devices.

For example, you have eight Manure Level Sensors you want to connect to an RPS. A Manure Level Sensor draws 125 mA. What is the total power consumption for these devices?

Using the formula $W = V \times A$, calculate the power consumption as follows:

$$13.6 \times .125 A = 1.70$$

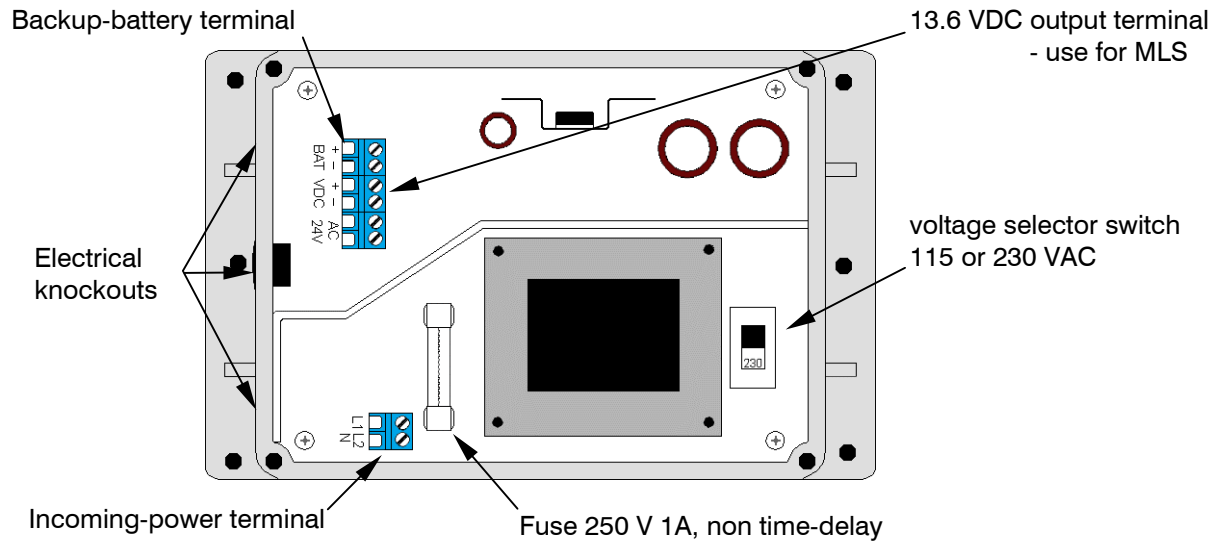
A Manure Level Sensor consumes 1.70 W of power.

Calculate the total power consumption.

$$8 \times 1.70 W = 13.6 W$$

The total power consumption of eight Manure Level Sensors is 13.6 W.

RPS layout



If you are not using the backup-battery terminal with a backup battery, you can use it as another 13.6 VDC output terminal.



The RPS has a resettable fuse that protects the unit against a severe overload. A severe overload of the AC output will trip the fuse. To reset the fuse, follow the steps below.

1. Disconnect the incoming power or the AC load.
2. Fix the problem that caused the overload.
3. Reconnect the power or the AC load.

RPS installation

Use the electrical knockouts to run the wires into the enclosure.

1. Remove the electrical knockouts from the enclosure.
2. Mount the RPS on a vertical surface with the electrical knockouts facing down.
3. Set the voltage selector switch to the correct incoming power. It is set at the factory for 230 VAC.
4. Connect the incoming power wires to the incoming power terminal.
5. Connect the devices to the output terminals.



Connecting the output terminals together will destroy the power supply and void the warranty.



Chapter 3: Configuring OMNI-Manure

This chapter explains how to install and configure OMNI-Manure.

- ◆ Installing and configuring OMNI-Manure
- ◆ Selecting units of measure
- ◆ Adding, editing, and removing manure groups
- ◆ Configuring manure reservoirs
- ◆ Configuring manure level alarms

Installing and configuring OMNI-Manure

OMNI-4000 has an Installation Wizard that guides you through the installation. Make sure you have all the hardware installed before installing OMNI-Manure. For more information, see **Chapter 2: Installing the hardware** on page 9.

To install OMNI-Manure

1. Insert your OMNI CD into your computer's CD-ROM drive.
The Installation Wizard should start automatically. If it does not start automatically, find and start the file `Autorun.exe` on the CD-ROM.
2. Follow the instructions on the screen.

After installing the hardware and software, you need to configure the software to work with the hardware and to display and monitor data the way you want.

Configuring OMNI-Manure involves several tasks:

- ◆ Selecting units of measure
- ◆ Creating manure groups
- ◆ Measuring and configuring manure storage reservoirs
- ◆ Configuring manure level alarms



Use the worksheets in Appendix A to help you configure OMNI-Manure.

Selecting the units of measure

The first options you need to configure are the units of measure for distance and liquid volume. OMNI-Manure uses these options when it displays data.



The units of measure you select for distance and liquid volume affect other OMNI-4000 modules.

For example, if you change the unit of measure for liquid volume, it will also affect OMNI-Water. Select standard units of measure for all modules.

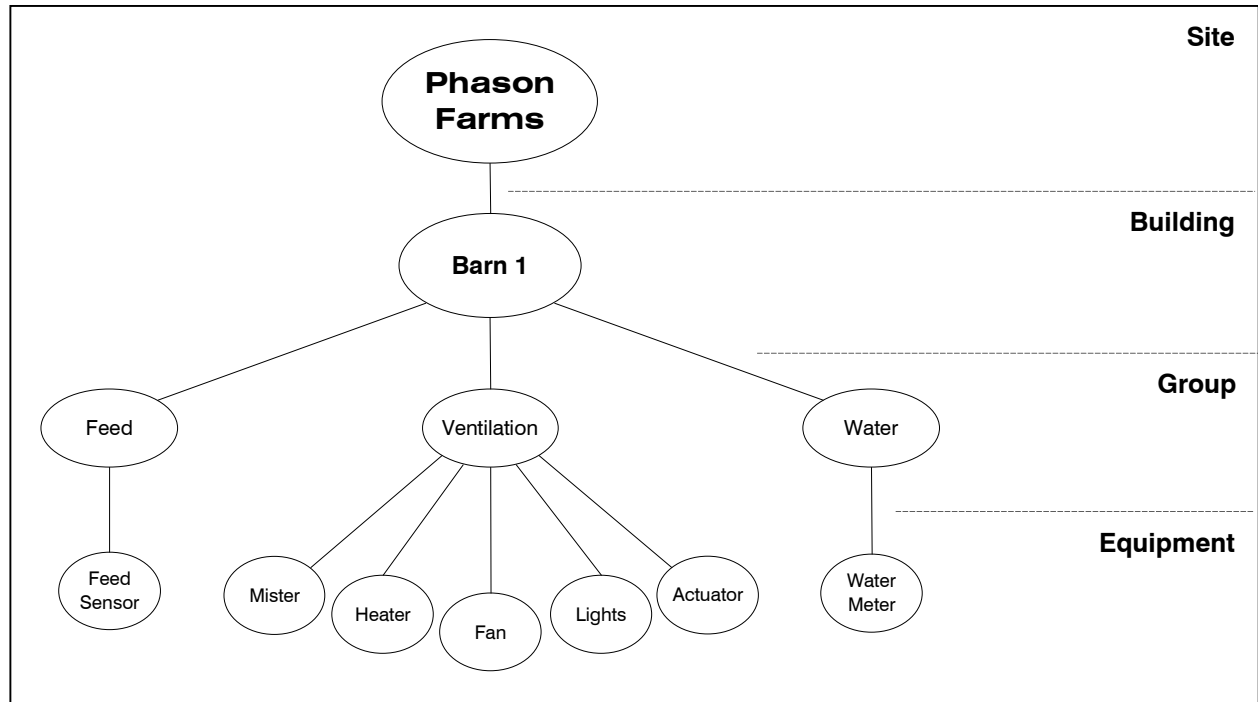
The Configuration Manager allows you to select the units of measure for distance and liquid volume. The Options tab is shown below.

To select the units of measure

1. Open the Configuration Manager and then click the Options tab.
2. In the Distance group box, click the option button beside the unit of measure you want to use.
3. In the Liquid Volume group box, click the option button beside the unit of measure you want to use.

Understanding manure groups

After you select the units of measure, you need to add manure groups. A manure group is the OMNI-Manure term for a manure storage reservoir (tank, pit, or lagoon) that is monitored by a Manure Level Sensor. The following image explains the relationships between the site, buildings, and groups.



Site

The site includes all the barns at your site that are controlled by the OMNI-4000.

Building

A building is a single barn at your site. A building consists of one or more groups.

Group

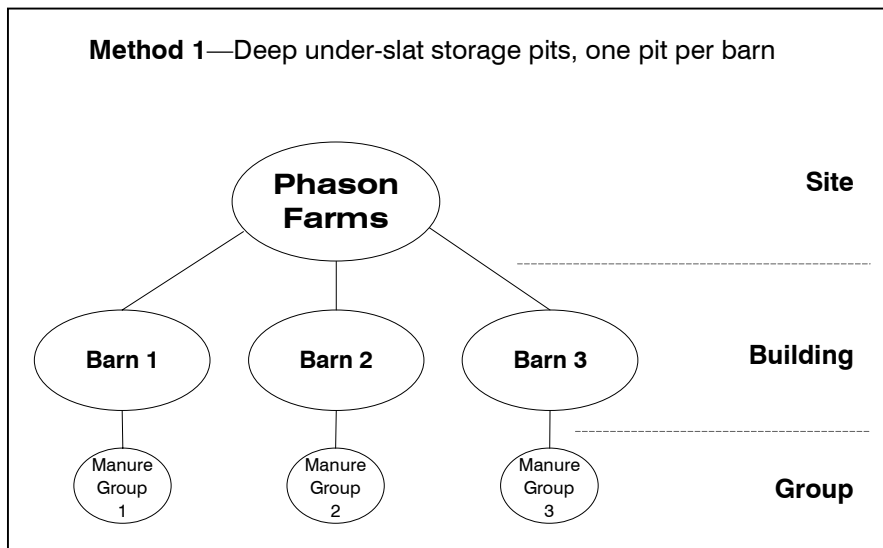
There are four types of groups in OMNI-4000: ventilation groups, feed groups, water groups, and manure groups. A manure group is the manure storage reservoir (tank, pit, or lagoon) for which the Manure Level Sensor measures the manure level. A manure group also contains all the settings and configuration for the Manure Level Sensor and reservoir it represents.

For information about ventilation, feed, or water groups, see the OMNI-4000 user manual, OMNI-Feed user manual, and OMNI-Water user manual.

Equipment

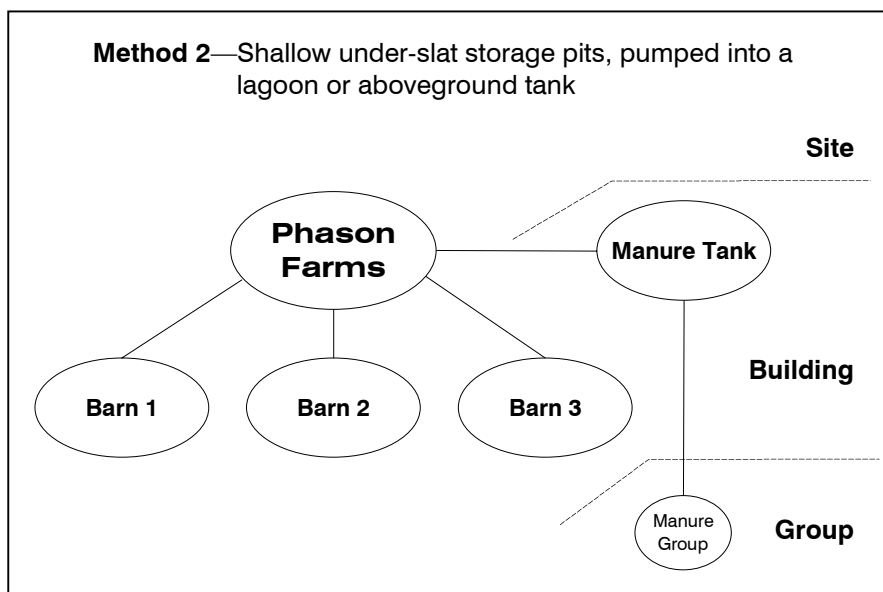
The equipment is items that are connected to a Power Block or OMNI-Server. Equipment includes fans, heaters, feed augers, water meters, etc. In OMNI-Manure, the equipment is the Manure Level Sensor that monitors the manure level in a reservoir.

The following images show two ways of configuring manure groups at your site. Method 1 has one deep under-slat storage pit per barn. For this method, create one manure group for each building.



Method 2 has shallow under-slat storage pits in each barn and pumps them into an aboveground tank or lagoon. The Manure Level Sensor monitors the level in the aboveground tank or lagoon. For this method:

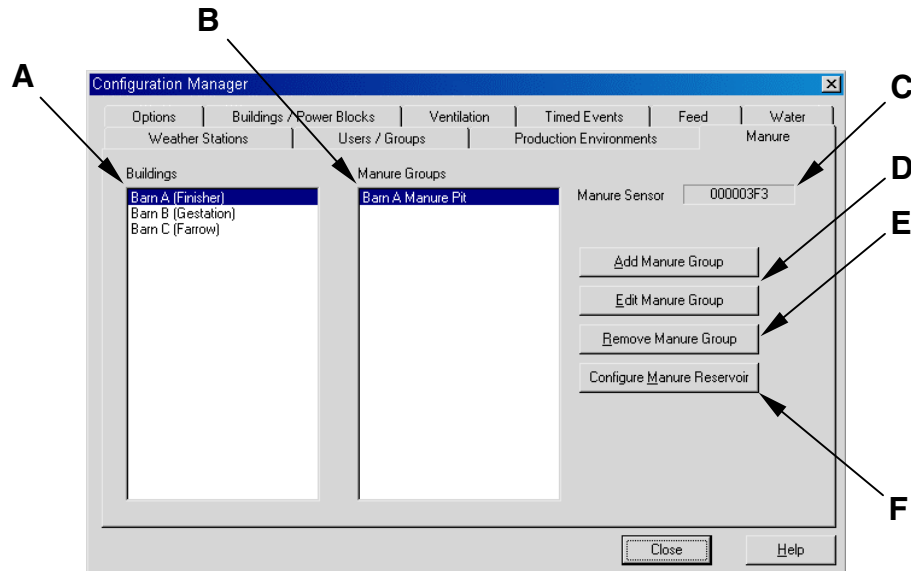
1. Create an 'imaginary' building and name it 'manure tank'.
2. Create a manure group for the manure tank building.



Adding, editing, and removing manure groups

After you install OMNI-Manure and select the units of measure, you need to add manure groups. If you add a Manure Level Sensor to a reservoir, you need to add a new manure group to OMNI-Manure. If you replace a Manure Level Sensor, you may need to edit the manure group.

The Configuration Manager allows you to add, edit, or remove manure groups. The Manure tab is shown below.



- A** This is a list of buildings at your site.
- B** This is a list of manure groups in the selected building.
- C** This is the Manure Level Sensor address for the selected manure group.
- D** These two buttons open the Manure Group Description window, which allows you to add or edit a manure group.
- E** This button allows you to remove a manure group.
- F** This button opens the Manure Reservoir Configuration window, which is where you enter the dimensions for a reservoir. For more information, see **Configuring manure reservoirs** on page 30.



Use the **Manure group worksheet** on page 53 to help you configure the manure groups.

To add a manure group

1. Open the Configuration Manager and then click the Manure tab.
2. Click **Add Manure Group**.
The Manure Group Description window appears.
3. In the Building list box, select the building containing the manure storage reservoir for which you want to create the manure group.
4. In the Group Name text box, enter a name for the manure group.
5. In the Manure Sensor list box, select the address of the Manure Level Sensor that will be monitoring the manure storage reservoir.



If there are no Manure Level Sensor addresses listed, make sure the Manure Level Sensors are properly connected to the OMNI-4000 system. For more information, see **Installing the Manure Level Sensor** on page 11.

6. Click **OK** to save the manure group and return to the Manure tab.

To edit a manure group

1. Open the Configuration Manager and then click the Manure tab
2. In the Buildings list box, select the building containing the manure group you want to edit.
3. Click **Edit Manure Group**.
The Manure Group Description window appears.
4. Make the changes to the manure group.
5. Click **OK** to save the changes and return to the Manure tab.

To remove a manure group

1. Open the Configuration Manager and then select the Manure tab
2. In the Buildings list box, select the building containing the manure group you want to remove.
3. From the Manure Groups list, select the manure group you want to remove and then click **Remove Manure Group**.
A confirmation window appears.
4. To remove the manure group, click **Yes**. To cancel and return to the Manure tab, click **No**.



When you remove a manure group from the Configuration Manager, you also remove it from the Settings Manager. OMNI-Manure will no longer collect data for that group.

The manure group does not disappear from the reports and viewers lists until all the manure data for that group is archived. Until then you can create reports and charts with the existing manure data for that group.

Configuring manure reservoirs

After selecting the units of measure and creating a manure group, you need to configure the manure storage reservoir. Since a Manure Level Sensor measures the height and volume of manure in a reservoir, you need to tell OMNI-Manure the dimensions of the reservoir.

You will need the engineering drawings that list the dimensions of your reservoir. The table below lists the dimensions (measurements) you need to enter for each type of reservoir.

Tank	Pit	Lagoon
Height Diameter Sensor offset	Height Length Width Sensor offset	Height Top length Bottom Length Top width Bottom width Sensor offset

- ◆ Write down the dimensions from the engineering drawings in the **Manure reservoir worksheet** on page 54.
- ◆ Measure the sensor offset and then enter the distance in the worksheet. The sensor offset is the distance from the top of the reservoir to the bottom of the sensor. A long straightedge or level and a plumb line are helpful for measuring the sensor offset.

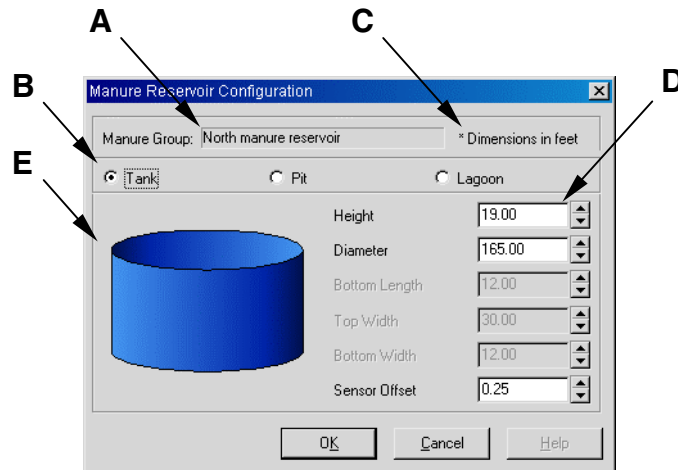


Make sure you measure and enter the dimensions in the same unit of measure you have selected for OMNI-Manure. For more information, see **Selecting the units of measure** on page 24.

When entering the height of the manure storage reservoir, subtract the freeboard height from the total height. Check the local regulations for the amount of freeboard necessary in your area.

After writing down the dimensions in the Manure reservoir worksheet, you need to enter the information into OMNI-Manure. OMNI-Manure uses these dimensions when it calculates the amount of manure in a reservoir.

The Manure Reservoir Configuration window is where you enter the dimensions for a manure storage reservoir. The Manure Reservoir Configuration window is shown below.



- A** This is the manure group you selected in the Manure tab.
- B** These option buttons allow you to select the type of reservoir.
- C** This is the unit of measure OMNI-4000 is configured for. You must enter the dimensions in the same unit of measure. For more information, see **Selecting the units of measure** on page 24.
- D** These spin boxes allow you to change the dimensions and sensor offset.
- E** This is an image of the reservoir (pit, tank, or lagoon). The image changes when you change the reservoir type.





Use the **Manure reservoir worksheet** on page 54 to help you configure the manure storage.

To configure a reservoir

1. Open the Configuration Manager and then click the Manure tab.
2. From the Buildings list box, select the building containing the reservoir you want to configure.
3. From the Manure Groups list box, select the manure group representing the reservoir you want to configure.
4. Click **Configure Reservoir**.
The Manure Reservoir Configuration window appears.
5. In the Reservoir Type group box, click the option button beside the type of reservoir you are configuring.
6. Place the cursor in one of the spin boxes, delete the existing number, and then enter the new dimension. Repeat this step for each dimension.



You can also use the  or  buttons on the spin boxes to adjust the reservoir dimensions.

7. Click **OK** to save the configuration and return to the Manure tab.



After entering the dimensions, make sure you have entered them correctly. Incorrect dimensions will affect the manure level measurements.

Setting the manure level alarms

After configuring the manure groups and manure storage, you can set the manure level alarms. You can have the same or different alarm levels for each manure group. There are two manure level alarms: pump level and alarm level.

Pump Level

The pump level is the manure level in feet or metres from the bottom of the manure storage reservoir. Set the pump level at the level you would usually pump out the reservoir.

When the manure level rises above the pump level, a message is displayed in the Manure Level Viewer and the Communication Center. OMNI-Manure updates this information every two hours.



OMNI-Manure does not control the pump; it only warns you that it is time to pump out the reservoir.

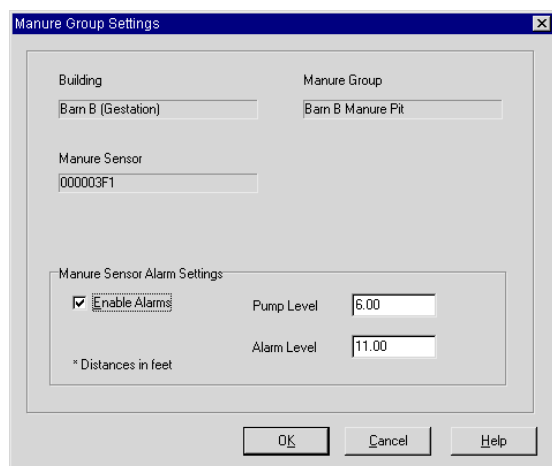
Alarm Level

The Alarm level is the manure level (in feet or metres from the bottom of the reservoir) at which there is a danger of overflow and you need to pump immediately.

When the manure level rises above the alarm level, a message is displayed in the Manure Level Viewer and the Communication Center and an entry is recorded in the alarm log. OMNI-Manure updates this information every two hours. For more information about the alarm log, see the OMNI-4000 user manual.

To configure the manure level alarms

1. Open the Settings Manager and then click the Manure tab.
2. From the Buildings list box, select the building containing the manure group you want to configure.
3. From the Manure Groups list box, select the manure group you want to configure and then click **Set up Manure Alarms**.
The Manure Group Settings window appears.



The Manure Group Settings window is a dialog box with a title bar that says "Manure Group Settings". It contains several input fields and a section for alarm settings. The "Building" field is set to "Barn B (Gestation)" and the "Manure Group" field is set to "Barn B Manure Pit". The "Manure Sensor" field is set to "000003F1". Below these fields is a section titled "Manure Sensor Alarm Settings" which contains a checked "Enable Alarms" checkbox, a "Pump Level" field set to "6.00", and an "Alarm Level" field set to "11.00". A note at the bottom left of this section says "* Distances in feet". At the bottom of the window are three buttons: "OK", "Cancel", and "Help".

4. In the Pump Level text box, enter the pump level. Make sure you enter the distance in the same unit of measure that you have selected for OMNI-Manure.
5. In the Alarm Level text box, enter the alarm level. Make sure you enter the distance in the same unit of measure that you have selected for OMNI-Manure.
6. To enable the alarms, click the Enable Alarms check box. A check mark appears in the box if the alarms are enabled.
7. Click **OK** to save the settings and return to the Manure tab.



Chapter 4: Monitoring manure levels

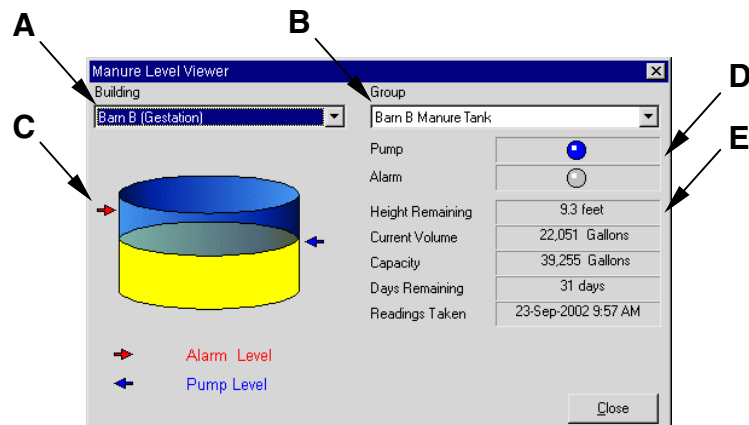
This chapter explains how to monitor and analyze the data that OMNI-Manure collects.

- ◆ Viewing manure levels
- ◆ Creating manure level charts
- ◆ Creating manure level reports
- ◆ Interpreting data

Viewing manure levels

The Manure Level Viewer displays information about the manure level in a manure storage reservoir. The yellow area is the manure level, the blue arrow is the pump level, and the red arrow is the alarm level. The boxes on the right display information about the manure level.

The Pump indicator changes to blue when the manure level is above the pump level. The Alarm indicator changes to red when the manure level is above the alarm level. For more information about alarm level settings, see **Setting the manure level** alarms on page 33.



- A This drop-down box contains a list of buildings at your site.
- B This drop-down box contains a list of manure groups in the selected building.
- C This is an image of the manure reservoir represented by the group.
- D The first two boxes are the pump and alarm level indicators.
- E The next five boxes contain information about the amount of manure in the reservoir.

Height Remaining

Height remaining is the height from the top of the manure to the top of the reservoir.

Current Volume

Current volume is the amount of manure in the reservoir. OMNI-Manure calculates the volume using the manure level and the dimensions of the reservoir.

Capacity

Capacity is the volume of manure that can be stored in the reservoir. OMNI-Manure calculates the capacity using the dimensions of the reservoir.

Days Remaining

Days remaining is the number of days remaining before the manure level reaches capacity. OMNI-Manure calculates the days remaining using the capacity of the reservoir and the average increase in the manure level during the last 30 days. Because this information is an estimate based on past manure level increases, you should use this information as a guideline only.

Readings Taken

Readings taken is the date and time the reading was taken. OMNI-Manure updates the information every two hours.

To view the manure level for a manure group

1. Open the Reports Utility and then click the Manure tab.
The Manure Reports Utility appears.
2. Click **View Manure Level**.
The Manure Level Viewer appears.
3. From the Building drop-down box, select the building containing the manure group for which you want to view the manure level.
4. From the Group drop-down box, select the manure group for which you want to view the manure level.
The Manure Level Viewer displays the information for the manure group.



If you see the message “Unable to determine manure level” in the bottom-right corner of the viewer, there is a problem with the Manure Level Sensor. For more information, see **Appendix B: Troubleshooting** on page 57



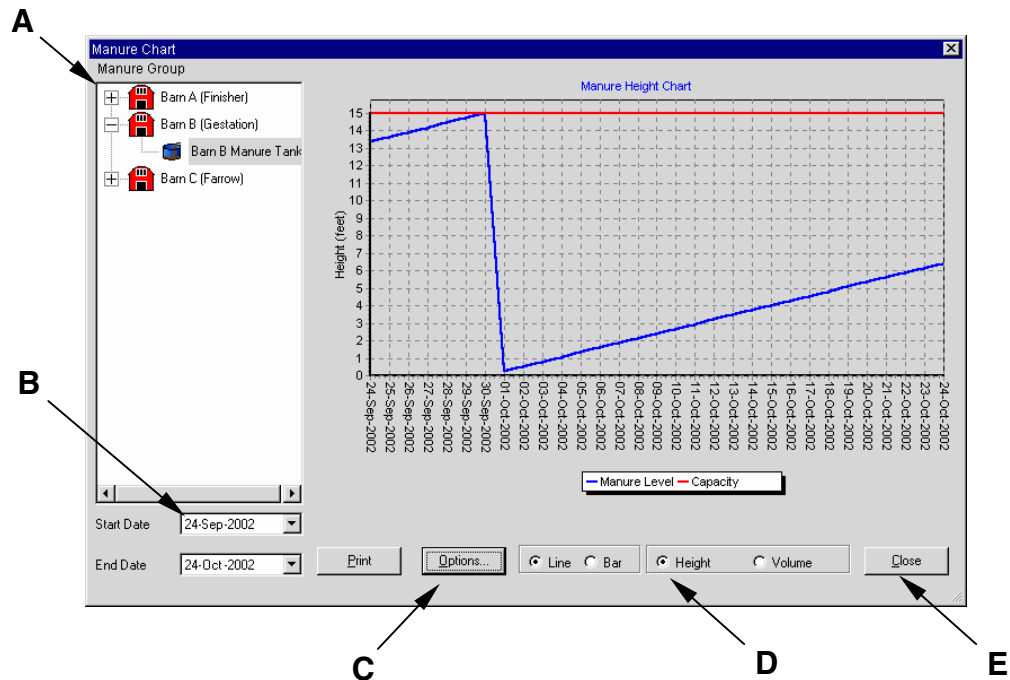
You can also view manure levels from the Settings Manager

1. Open the Settings Manager and then click the Manure tab.
2. From the Buildings list, select the building containing the manure group for which you want to view the manure level.
3. From the Manure Groups list, select the group for which you want to view the manure level.
4. Click **View Manure Levels**.
The Manure Level Viewer displays the level for the selected group.

Creating manure level charts

You can create charts that display the manure level for a manure group. The chart displays the manure level for each selected day and the capacity of the reservoir.

OMNI-Manure displays manure level charts as either bar or line charts. Line charts are a better representation of the manure level and capacity is always a line and cannot be changed. The Manure Level Chart is shown below.



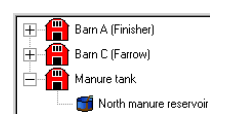
- A** This is a list of manure groups at your site. The list is sorted by building.
- B** These drop-down boxes allow you to change the start and end dates.
- C** This button opens the Manure Chart Options window, which is where you change the display options for the chart.
- D** These option buttons allow you to choose the type of chart.
- E** These option buttons allow you to select whether you want to display the chart as manure height or volume.

To create a manure level chart

1. Open the Reports Utility and then click the Manure tab.
2. Click **Manure Chart**.
The Manure Chart window appears.
3. From the Manure Groups list box, select the manure group for which you want to create the chart.



Click the + to the left of a building to show the list of manure groups in that building.



4. Select the type of chart you want to create:
 - ◆ To select a bar chart, click the Bar option button.
 - ◆ To select a line chart, click the Line option button.
5. Select a date range for the chart. For more information, see **Selecting a date range** on page 43.
The Manure Chart window displays your chart.
6. To print your chart, click **Print**.



In the Settings Manager, you can automatically create a manure level chart containing the last 30 days of manure data.

1. Open the Settings Manager and then click the Manure tab.
2. From the Buildings list, select the building containing the manure group for which you want to create the chart.
3. From the Manure Groups list, select the group for which you want to create the chart.
4. Click **View Chart**.

Changing the chart options

You can display either a bar chart or a line chart. Line charts are a better representation of the manure level. The capacity is always a line and cannot be changed.

When you open the Manure Level Chart window, the chart and options displayed are the ones that were last selected. The options include:

Bar chart

- ◆ Color—16 to choose from
- ◆ Border—Visible/not visible





Line chart

- ◆ Color—16 to choose from
- ◆ Line width—1 to 5

Printer

- ◆ Page orientation—portrait or landscape

To change the chart options

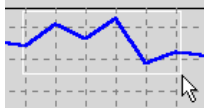
1. Click **Options**.
The Manure Chart Options window appears.
2. Make the changes:
 - ◆ To change the line color, click  on the Line Color drop-down box and then select a color.
 - ◆ To change the line width, click  or  on the Line Width spin box.
 - ◆ To change the bar color, click  on the Bar Color drop-down box and then select a color.
 - ◆ To change the bar border, click the Visible check box.
 - ◆ To change the printer page orientation, click the option button beside the page orientation you want to use.
3. Click **Done**.

Zooming and panning

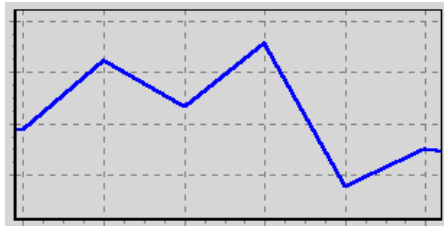
You can zoom in on (magnify) or pan (scroll along) a chart. This is useful if you have a chart that covers a large date range and you want to zoom in on a specific day or small date range.

To zoom in on a chart

1. Click and drag to select the area you want to magnify.



2. Release the mouse button.
The chart magnifies the area you selected.



To zoom out from the chart

- ◆ Click on the chart and drag to the top-right and then release the mouse button.
The chart returns to normal magnification.

To pan a chart

- ◆ Right-click the chart and drag the mouse in the direction you want the chart to move.




You can make the chart bigger by left-clicking the bottom-right corner of the window and dragging.






Selecting a date range

OMNI-Manure charts and reports have an easy way to select a date range for the manure level data you want to display. A date range consists of a start date and an end date. The end date cannot be before the start date.

To select a date range

1. Click  on the Start Date drop-down box.
The calendar appears.



2. Select a start date:
 - ◆ To move forward and backward through the months, click  or .
 - ◆ To select a specific month, click the month on the calendar and then select the month you want to go to.
 - ◆ To move forward and backward through the years, click the year on the calendar and then click  or .
3. Click anywhere on the desktop to return to the chart or the report.
4. Click  on the End Date drop-down box.
5. Select an end date.

Creating Manure storage reports

Reports give you exact data for the period of time you choose. OMNI-Manure has a report that shows the expected full date, the fill rate, the volume, and the height of the manure in the reservoir. Below is a sample of the Manure storage report.

Manure Storage Report
Barn B Manure Tank
01-Dec-2002 to 31-Dec-2002
Expected Full Date: 22-Jan-2003
Fill Rate: 595 gallons per day

Date	Volume (gallons)	Height (feet)	% of full
01-Dec-2002	4,474.70	1.90	12
02-Dec-2002	5,116.06	2.18	14
03-Dec-2002	5,755.60	2.45	16
04-Dec-2002	6,398.26	2.72	18
05-Dec-2002	7,039.39	3.00	19
06-Dec-2002	7,673.54	3.27	21

You can create manure reports in two different formats: HTML and comma separated value.

HTML reports

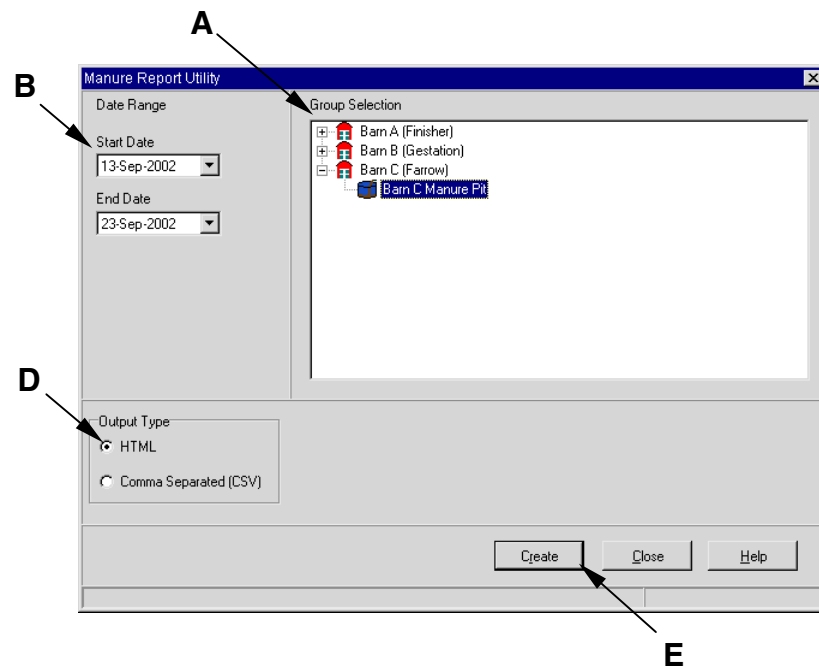
Choose HTML (Hypertext Markup Language) if you want a report you can view and print. You can view and print HTML reports using your web browser. For examples of HTML reports, see below and **Printing report** on page 47.

Comma separated value files

Choose comma separated value (CSV) if you want to export the manure data to another program such as a spreadsheet program or reporting package. If you only want to view or print a report, choose HTML.

A CSV file is a file that consists of data fields separated by commas. CSV files allow different databases to communicate ('talk') to each other. For information about CSV files, see the user manual for the program you want to import the CSV file into.

The Manure Reports Utility allows you to create manure level reports. The Manure Reports Utility is shown below.



- A** This is a list of manure groups at your site. The list is sorted by building.
- B** These drop-down boxes allow you to change the start and end dates for the report.
- C** These option buttons allow you to select the type of output for the report.
- D** This button creates the report.

To create a report

1. Open the Reports Utility and then click the Manure tab.
2. Click **Manure Report**.
The Manure Reports Utility appears.
3. From the Group Selection list box, select the manure groups you want in the report.



Click the + to the left of a building to show the list of manure groups.



4. Select the type of report output:
 - ◆ To select an HTML report, click the HTML option button.
 - ◆ To select a comma separated value file, click the Comma Separated (CSV) option button.
5. Select a date range for the report. For more information, see **Selecting a date range** on page 43.
6. Click **Create**.
The Save As window appears.
7. In the File name text box, enter a name for the file and then click **Save**.
OMNI-Manure displays your report.



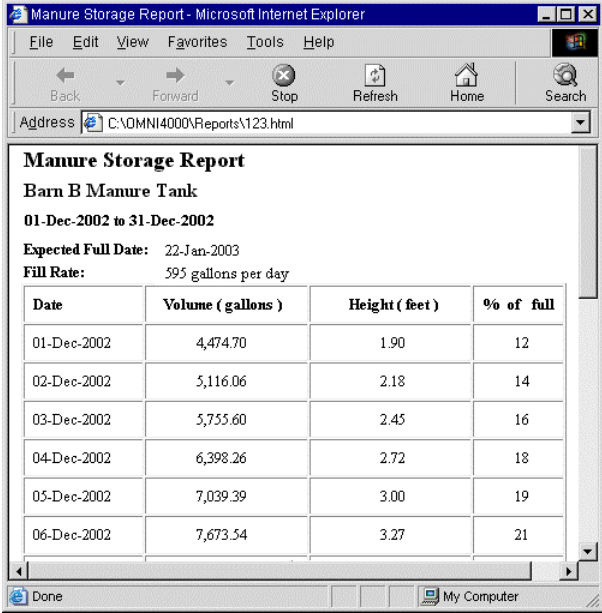
The default directory for reports is C:\omni4000\reports\. OMNI-Manure will save your report in this directory unless you choose a different one.

HTML files open in your web browser. You can view your saved HTML reports anytime by opening them using your web browser.

CSV files open in a text editor, spreadsheet, or similar program.

Printing reports

You can view and print HTML reports using your web browser. The image below shows a sample of an HTML report in Microsoft's Internet Explorer™.



Manure Storage Report
Barn B Manure Tank
01-Dec-2002 to 31-Dec-2002
Expected Full Date: 22-Jan-2003
Fill Rate: 595 gallons per day

Date	Volume (gallons)	Height (feet)	% of full
01-Dec-2002	4,474.70	1.90	12
02-Dec-2002	5,116.06	2.18	14
03-Dec-2002	5,755.60	2.45	16
04-Dec-2002	6,398.26	2.72	18
05-Dec-2002	7,039.39	3.00	19
06-Dec-2002	7,673.54	3.27	21

CSV files should be imported into a program such as a spreadsheet or reporting program. They are not meant to be printed in their standard format. For information about CSV files, see the user manual for the program into which you want to import the file.

To print your report

1. Open the HTML report using your web browser.
2. On the menu bar, click **File** and then click **Print**.

Interpreting data

We said earlier in the manual that OMNI-Manure charts and reports allow you to monitor manure levels at your site. OMNI-Manure charts and reports can also help you determine if you have leaks, OMNI communication problems, and many other irregularities.

For example,

In an OMNI-Manure report, if a day shows a level of '--', then there was no reading for that day. This is not the same as a level of '0'.

- ◆ A '--' reading means that there was no communication between the OMNI-4000 system and the Manure Level Sensor. This can be because the OMNI-4000 had a communication problem, or the computer was not on to collect data.
- ◆ A '0' reading means that there was no manure in the storage reservoir that day.

If you see an irregularity in a manure report or chart, try to determine what may have caused the irregularity. OMNI-Manure collects and displays manure level data, it's up to you to add intelligence to the data and use it to your advantage.

Understanding data accuracy

There are two main things that affect the accuracy of the data displayed: the amount of data collected and the reservoir dimensions.

Amount of data collected

OMNI-Manure needs to collect data to calculate manure levels and other information for the charts, reports, and viewer. If the computer is not on and OMNI-Manure is not running, or there is a communication problem (see troubleshooting), then OMNI-Manure cannot collect accurate data.

The table on the next page shows the amount of data required for the viewer, chart, and report.

Type of report	Type of data	Amount required
Manure level viewer	Height remaining Days remaining	Two hours Three days*
Manure level chart	Height	One day
Manure storage report	Expected full date Fill rate Height/volume	Three days* Three days* One day
* OMNI-Manure calculates the days remaining, expected full date, and fill rate using the capacity of the reservoir and the average increase in the manure level during the last 30 days. Three days is the minimum amount of data needed to calculate the information, but accuracy increases when more data is available.		

Reservoir dimensions

Reservoir dimensions affect the accuracy of all the information OMNI-Manure displays. OMNI-Manure uses these dimensions to calculate the amount of manure in the reservoir. If the dimensions are in the wrong unit of measure or are not correct, the data displayed will not be correct. For more information, see **Configuring manure reservoirs** on page 30.

Maintaining data

OMNI-Manure writes its information (data) to your computer's hard disk. To make sure you do not lose any data if you have computer problems, you need to regularly back up your data.

The OMNI-4000 Backup and Restore utility allows you to back up your OMNI-4000 system configuration and settings information. You can use the utility to restore your configuration and settings if your computer crashes or your database becomes corrupts.

The utility does not back up historical records (such as the alarm log) maintained by the OMNI-4000. The information stored in the backups fits on a single 1.44 MB floppy diskette or can be e-mailed elsewhere for offsite storage.



If you are backing up your complete hard drive on a regular basis, you may not need to run this utility. A complete hard drive backup preserves not only settings and configuration information, but historical records as well.



Back up your system settings and configuration information at least once per week.
Store your backups off-site in a safe place where you can easily access them.
For more information about backing up and restoring data, see the OMNI-4000 user manual.



Appendixes

- ◆ Appendix A: Worksheets
- ◆ Appendix B: Troubleshooting
- ◆ Appendix C: Hints and tips
- ◆ Appendix D: Glossary

Appendix A: Worksheets

This appendix contains worksheets to help you set up OMNI-Manure.

Manure group worksheet

Use the Manure group worksheet to help you configure the feed groups. The first line is an example of how to fill in the worksheet. For more information about configuring manure groups, see **Understanding manure groups** on page 25.

Building	Manure group	Storage type (tank/pit/lagoon)	MLS address
<i>Manure tank</i>	<i>North manure reservoir</i>	<i>Tank</i>	<i>00000035</i>

Manure reservoir worksheet

Enter the manure storage dimensions in the worksheets on the next page. Use the information in the worksheet when you configure the manure storage in OMNI-Manure. The first entry is an example of how to fill in the worksheet

When you enter the dimensions in the software, you need to enter them as either feet or metres (depending on what you have selected in the Options tab of the Configuration Manager). If your measurements contain inches or centimetres (for example one foot, six inches), you will need to convert them to feet or metres.

For example, if the diameter is 50 feet 9 inches, then you would enter 50.75 in the Manure Reservoir Configuration window ($9 \div 12 = 0.75$). For more information, see **Configuring manure reservoirs** on page 30.

The chart below shows some common conversions for inches to feet and centimetres to metres.

Inches	Feet	Centimetres	Metres
1	0.08	10	0.10
2	0.17	20	0.20
3	0.25	30	0.30
4	0.33	40	0.40
5	0.42	50	0.50
6	0.50	60	0.60
7	0.58	70	0.70
8	0.67	80	0.80
9	0.75	90	0.90
10	0.83	100	1.00
11	0.92		
12	1.00		



Make sure you measure and enter the dimensions in the same unit of measure you have selected for OMNI-Manure. For more information, see

Selecting the units of measure on page 24.

When entering the height of the manure storage reservoir, subtract the freeboard height from the total height. Check the local regulations for the amount of freeboard necessary in your area.

Building	Manure group	Tank dimensions (feet/metres)		
		Height	Diameter	Sensor offset
<i>Manure tank</i>	<i>North manure reservoir</i>	<i>19 ft.</i>	<i>165 ft.</i>	<i>0.25 ft.</i>

Building	Manure group	Pit dimensions (feet/metres)			
		Height	Length	Width	Sensor offset
<i>NW finisher</i>	<i>Finisher reservoir</i>	<i>8 ft.</i>	<i>150 ft.</i>	<i>48 ft.</i>	<i>0.5 ft.</i>

Building	Manure group	Lagoon dimensions (feet/metres)					
		Height	Top length	Bottom length	Top width	Bottom width	Sensor offset
<i>Manure Reservoir</i>	<i>Manure reservoir</i>	<i>20 ft.</i>	<i>200 ft.</i>	<i>180 ft.</i>	<i>150 ft.</i>	<i>135 ft.</i>	<i>4 ft.</i>

Manure level alarm settings worksheet

Use the worksheet to list the alarm settings for each manure group. Use the information in the worksheet when you configure the alarms in OMNI-Manure. The first entry is an example of how to fill in the worksheet

Pump Level

This is the manure level in feet or metres from the bottom of the manure storage reservoir. When the manure reaches the pump level, it is time to pump. Set the pump level at the level you would usually pump the manure.

When the manure level rises above the pump level, a message is displayed in the Manure Level Viewer and the Communication Center.

Alarm Level

This is the manure level (in feet or metres from the bottom of the reservoir) at which there is a danger of overflow and you need to pump immediately.

For more information about configuring manure level alarms, see **Setting the manure level** alarms on page 33.

Building	Manure group	Reservoir type (tank/pit/lagoon)	Pump level (feet/metres)	Alarm level (feet/metres)
<i>Manure tank</i>	<i>North manure reservoir</i>	<i>Tank</i>	<i>13 ft.</i>	<i>17 ft.</i>

Appendix B: Troubleshooting

If you are having problems using OMNI-Manure, look up the problem in the table below and then follow the instructions to resolve the problem. If you have a problem that is not listed here, try to determine what might be causing the problem. If you cannot resolve the problem, call your dealer or Phason's customer support (see **Service and technical support**.)

Problem	Possible cause	Possible resolution
"Unable to determine level" in Manure Level Viewer or the manure level displays as '--' in a chart or report	OMNI-Manure is not receiving data from the Manure Level Sensor	Make sure the sensor is properly wired, including the communication wiring. For more information, see Installing the Manure Level Sensor on page 11.
Inaccurate manure level measurements or data missing on the viewer, chart, or report.	Incorrect reservoir dimensions	Make sure the reservoir dimensions are correct. For more information, see Configuring manure reservoirs on page 30.
	Not enough data	Let OMNI-Manure collect more data before creating the chart or report. For more information, see Understanding data accuracy on page 48.
The Manure Level Sensor address does not appear in the Manure Group Description window.	OMNI-Manure cannot detect the Manure Level Sensor	Make sure the sensor is properly wired, including the communication wiring. For more information, see Installing the Manure Level Sensor on page 11.

Appendix C: Hints and tips

- ◆ Use the worksheets in Appendix A to help you configure OMNI-Manure.
- ◆ When entering the reservoir dimensions, make sure you enter them correctly and in the same unit of measure you have selected for OMNI-Manure. Inaccurate measurements affect manure level measurements.
- ◆ Inspect the sensor face every three months. Use a *soft* brush to *gently* remove any dirt from the screen.
Do not use sharp tools, wire brushes, or compressed air to clean the sensor face. These will damage the sensor and void the warranty.

Appendix D: Glossary

AC	Alternating current
Alarm level	This is the manure level (in feet or metres from the bottom of the reservoir) at which there is a danger of overflow and you need to pump immediately.
CSV	Comma separated value. A file type consisting of data fields separated by commas. CSV files allow different databases to communicate ('talk') to each other.
DC	Direct current
Freeboard	<p>The reserve volume in a manure storage reservoir that minimizes the chance of the contents overflowing and causing contamination. Freeboard is usually enough capacity to hold the water entering the reservoir from the highest intensity 24-hour rainfall expected to occur within 25 years. See the local regulations for your area.</p> <p>Do not include the freeboard level in your height measurement for the reservoir.</p>
Height remaining	The height from the top of the manure to the top of the reservoir.
HTML	Hypertext markup language. The language used to make information viewable by a web browser.
Manure group	The reservoir for which the Manure Level Sensor measures manure levels. A manure group also contains all the settings and configuration for the Manure Level Sensor and reservoir it represents.
Manure storage reservoir	The place where your site stores the animal waste. OMNI-Manure has three types of reservoirs: aboveground tanks, pits (under-slat storage), and earthen lagoons.
Pump level	This is the manure level in feet or metres from the bottom of the manure storage reservoir. When the manure reaches the pump level, it is time to pump.
VAC	Volts of alternating current
VDC	Volts of direct current
Reservoir	See manure storage reservoir

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